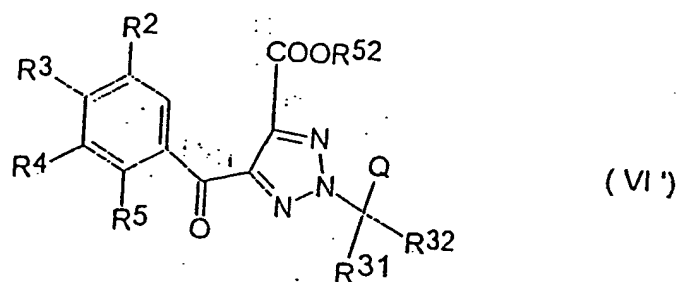


Amendments to the Claims

1-18. (Cancelled)

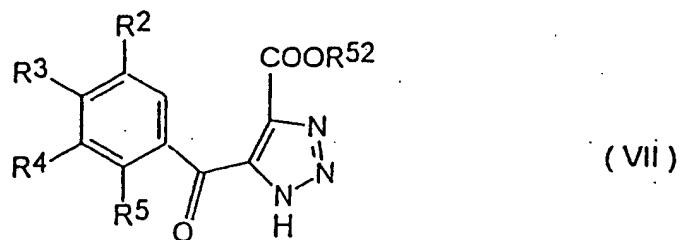
19-21. (Cancel)

22. (Withdrawn) A process for producing a compound represented by formula (VI')



wherein Q represents the group (i) as defined in claim 1, R^2 to R^5 , R^{31} , R^{32} , and R^{52} are as defined above, which comprises the steps of:

(1) reacting a compound represented by formula (VII)



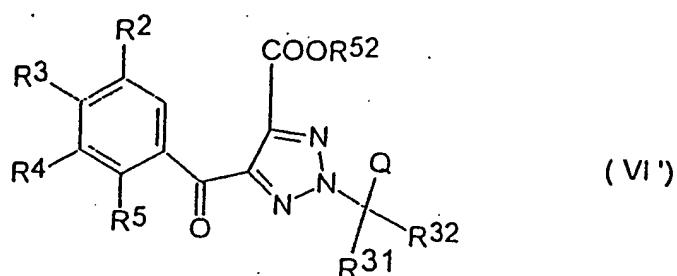
wherein R^2 to R^5 and R^{52} are as defined above, with a compound represented by $R^{31}R^{32}C=O$ wherein R^{31} and R^{32} are as defined in claim 1;

(2) reacting the compound prepared in step (1) with a compound represented by $R^{71}-C(=O)-$

R^{72} wherein R^{71} and R^{72} each independently represent a chlorine atom, 4-nitrophenyl, or 1-imidazolyl;
and

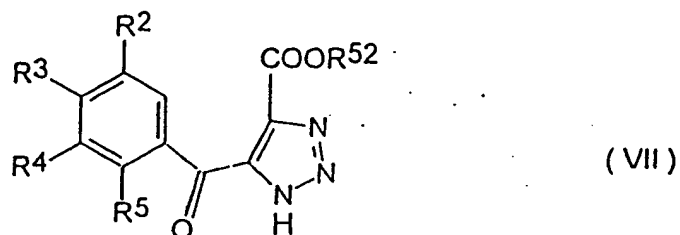
(3) reacting the compound prepared in step (2) with a compound represented by $R^{33}OH$ wherein R^{33} is as defined in claim 1.

23. (Withdrawn) A process for preparing a compound represented by formula (VI')



wherein Q represents group (i) as defined in claim 1, R^2 to R^5 , R^{31} , R^{32} , and R^{52} are as defined above,
which comprises the steps of:

(1) reacting a compound represented by formula (VII)

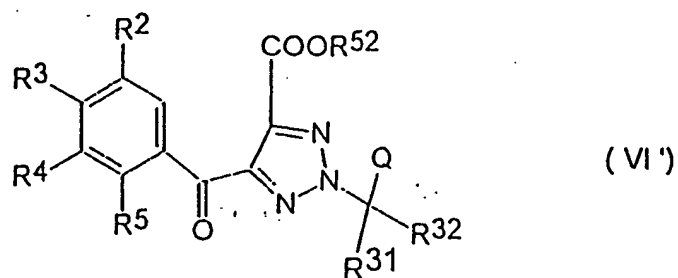


wherein R^2 to R^5 and R^{52} are as defined above, with a compound represented by $R^{31}R^{32}C=O$ wherein R^{31} and R^{32} are as defined in claim 1; and

(2) reacting the compound prepared in step (1) with a compound represented by $HalCOOR^{33}$

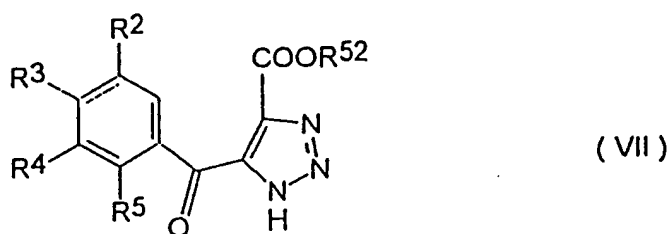
wherein Hal represents a halogen atom and R^{33} is as defined in claim 1, in the presence of an alkali metal carbonate and an alkali metal iodide.

24. (Withdrawn) A process for producing a compound represented by formula (VI')



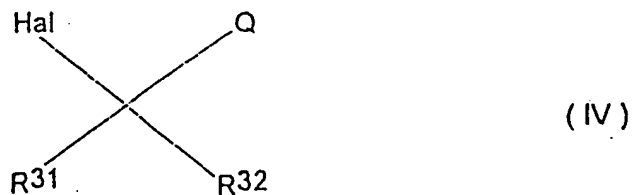
wherein Q represents group (i) as defined in claim 1, R^2 to R^5 , R^{31} , R^{32} , and R^{52} are as defined above, which comprises the step of

reacting a compound represented by formula (VII)



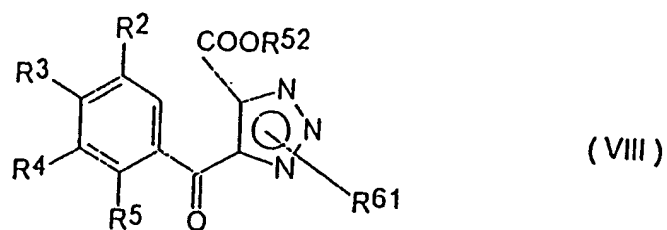
wherein R^2 to R^5 and R^{52} are as defined above,

with a compound represented by formula (IV)

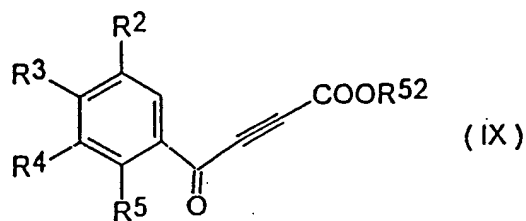


wherein Hal represents a halogen atom, Q represents the group (i) as defined in claim 1, and R³¹ and R³² are as defined above, in the presence of an inorganic base and an alkali metal iodide.

25. (Withdrawn) A process for preparing a compound represented by formula (VIII)



wherein R² to R⁵, R⁵², and R⁶¹ are as defined above, which comprises the step of
(a) reacting a compound represented by formula (IX)

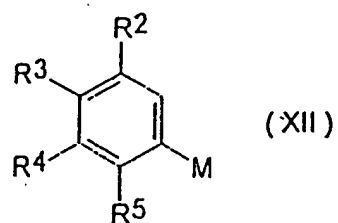


wherein R² to R⁵ and R⁵² are as defined above,
with a compound represented by formula (X)



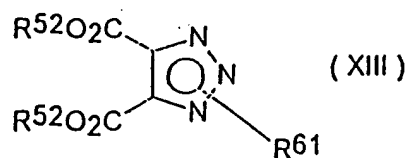
wherein R⁶¹ is as defined above, or

(b) reacting a compound represented by formula (XII)



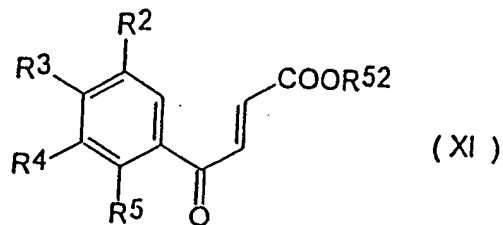
wherein M represents lithium, magnesium chloride, magnesium bromide, magnesium iodide, zinc bromide, zinc iodide, cadmium bromide, iodide cadmium, or copper and R² to R⁵ are as defined in claim 1,

with a compound represented by formula (XIII)



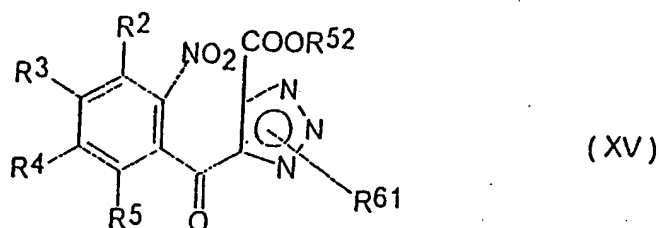
wherein R⁵² and R⁶¹ are as defined above.

26. (Withdrawn) A process according to claim 25, which further comprises the step of, prior to the reaction of the compound represented by formula (IX) with the compound represented by formula (X) in step (a), dehydrogenating a compound represented by formula (XI)

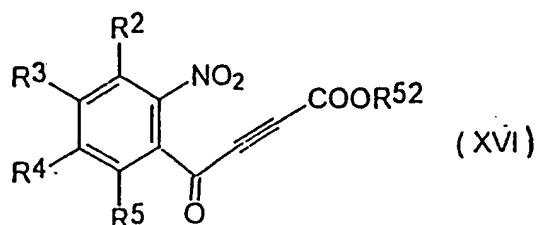


wherein R^2 to R^5 and R^{52} are as defined above,
to produce the compound represented by formula (IX).

27. (Withdrawn) A process for producing a compound represented by formula (XV)



wherein R^2 to R^5 , R^{52} , and R^{61} are as defined above, which comprises the step of
reacting a compound represented by formula (XVI)

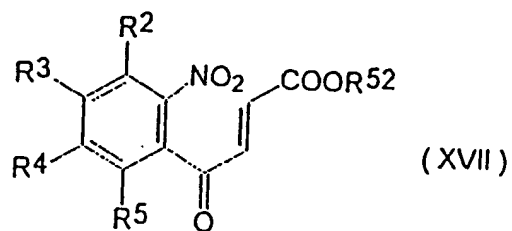


wherein R^2 to R^5 , and R^{52} are as defined above,
with a compound represented by formula (X)



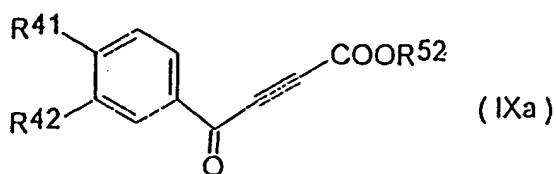
wherein R^{61} is as defined in claim 18.

28. (Withdrawn) A process according to claim 27, which further comprises the step of,
prior to the reaction of the compound represented by formula (XVI) with the compound represented
by formula (X), a compound represented by formula (XVII)



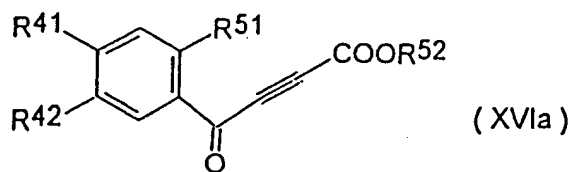
wherein R^2 to R^5 and R^{52} are as defined above,
 is dehydrogenated to produce the compound represented by formula (XVI).

29. (Withdrawn) A compound represented by formula (IXa) or a salt or solvate thereof



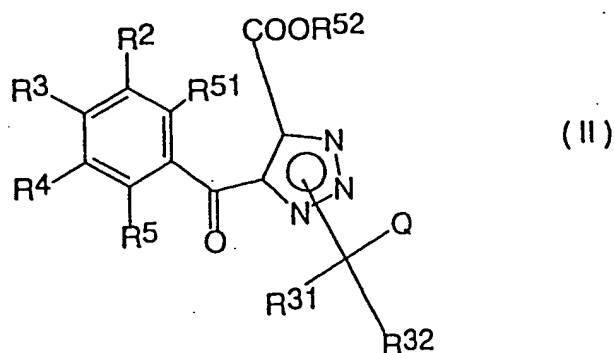
wherein R^{41} , R^{42} , and R^{52} are as defined in claim 6, provided that R^{41} and/or R^{42} do not represent a hydrogen atom.

30. (Withdrawn) A compound represented by formula (XVIa) or a salt or solvate thereof



wherein R^{41} , R^{42} , R^{51} , and R^{52} are as defined in claim 6.

31. (Currently amended) A compound represented by formula (II) or a salt or solvate thereof:



wherein R^2 , R^3 , R^4 , and R^5 , which may be the same or different, represent any of the following (a) to (n):

- (a) a hydrogen atom;
- (b) a halogen atom;
- (c) an optionally protected hydroxyl group a hydroxyl group optionally protected by acetyl, chloroacetyl, dichloroacetyl, trichloroacetyl, benzoyl, 4-nitrobenzoyl, 3-oxobutyryl, benzyl, diphenylmethyl, triphenylmethyl, 4-methoxybenzyl, 3,4-dimethoxybenzyl, methoxymethyl, methoxyethoxymethyl, benzyloxymethyl, trimethylsilyl, tert-butyldimethylsilyl, triphenylsilyl, 2-tetrahydropyranyl, or trimethylsilylethoxymethoxy,
- (d) formyl;
- (e) C_{1-12} alkyl which may be substituted by a halogen atom;

(f) C_{1-12} alkenyl which has one or more carbon-carbon double bonds and may be substituted by

- (1) a halogen atom,
- (2) cyano,
- (3) $-COR^9$ wherein R^9 represents a hydrogen atom or C_{1-6} alkyl,

(4) $-COOR^{10}$ wherein R^{10} represents a hydrogen atom or C_{1-6} alkyl,

(5) $-CONR^{11}R^{12}$ wherein R^{11} and R^{12} , which may be the same or different, represent

(i) a hydrogen atom,

(ii) C_{1-6} alkyl which may be substituted by amino optionally substituted by C_{1-4} alkyl, phenyl optionally substituted by C_{1-4} alkyl which may be substituted by a saturated five- to seven-membered heterocyclic ring containing one or two nitrogen atoms (the nitrogen atoms may be substituted by C_{1-4} alkyl), or a saturated or unsaturated five- to seven-membered heterocyclic ring,

(iii) phenyl which may be substituted by carboxyl, or

(iv) a saturated or unsaturated five to seven-membered heterocyclic ring,

(6) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C_{1-4} alkyl or may form a bicyclic ring fused with another ring;

(g) C_{1-12} alkoxy which may be substituted by

- (1) a halogen atom,
- (2) a hydroxyl group,
- (3) cyano,

- (4) C₁₋₇ cycloalkyl,
- (5) phenyl,
- (6) C₁₋₄ alkoxy,
- (7) phenoxy,
- (8) amino which may be substituted by C₁₋₄ alkyl,
- (9) -COR¹³ wherein R¹³ represents a hydrogen atom, C₁₋₆ alkyl, phenyl optionally substituted by halogen or C₁₋₄ alkoxy, or phenyl C₁₋₄ alkyl,
- (10) -COOR¹⁴ wherein R¹⁴ represents a hydrogen atom or C₁₋₆ alkyl,
- (11) -CONR¹⁵R¹⁶ wherein R¹⁵ and R¹⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or
- (12) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or phenyl C₁₋₄ alkyl;
- (h) -C=N-OR^{16a} wherein R^{16a} represents a hydrogen atom, C₁₋₆ alkyl, phenyl C₁₋₄ alkyl, or phenyl;
- (i) $-(CH_2)_mOR^{17} - (CH_2)_mOR^{17}$ wherein m is an integer of 0 to 4, and R¹⁷ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl C₁₋₄ alkyl of which one or more hydrogen atoms on the benzene ring may be substituted by C₁₋₄ alkyl;
- (j) $-(CH_2)_kCOR^{18} - (CH_2)_kCOR^{18}$ wherein k is an integer of 1 to 4, and R¹⁸ represents a hydrogen atom or C₁₋₄ alkyl;
- (k) $-(CH_2)_jCOOR^{19} - (CH_2)_jCOOR^{19}$ wherein j is an integer of 0 to 4, and R¹⁹ represents a hydrogen atom or C₁₋₆ alkyl;
- (l) $-(CH_2)_pNR^{20}R^{21} - (CH_2)_pNR^{20}R^{21}$ wherein p is an integer of 1 to 4, and R²⁰ and R²¹, which may be the same or different, represent

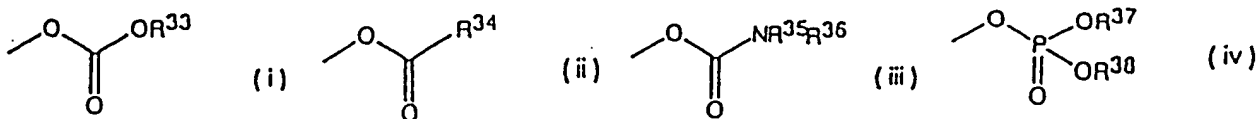
- (1) a hydrogen atom,
- (2) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl,
- (3) phenyl C₁₋₄ alkyl,
- (4) -COR²² wherein R²² represents a hydrogen atom or C₁₋₄ alkyl which may be substituted by carboxyl, or
- (5) -SO₂R²³ wherein R²³ represents C₁₋₄ alkyl or phenyl which may be substituted by a halogen atom;

(m) $-(CH_2)_q-CONR^{24}R^{25}-(CH_2)_q-CONR^{24}R^{25}$ wherein q is an integer of 0 to 4, and R²⁴ and R²⁵, which may be the same or different, represent a hydrogen atom, a saturated or unsaturated five- to seven-membered heterocyclic ring, or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or alternatively R²⁴ and R²⁵ may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached (the heterocyclic ring may further contain at least one oxygen, nitrogen, or sulfur atom, may form a bicyclic ring fused with another ring, or may be substituted by C₁₋₄ alkyl); and

(n) -NR²⁶R²⁷ wherein R²⁶ and R²⁷, which may be the same or different, represent a hydrogen atom or -COR²⁸ wherein R²⁸ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl which may be substituted by C₁₋₄ alkyl or C₁₋₆ alkoxy optionally substituted by phenyl;

R³¹ and R³², which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a halogen atom; and

Q represents a group selected from the following groups (i) to (iv) or a halogen atom or C₁₋₆ alkoxy:



wherein

R'' represents

C₁₋₆ alkyl which may be substituted by C₁₋₆ alkoxy optionally substituted by C₁₋₆ alkoxy, phenyl optionally substituted by C₁₋₆ alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C₁₋₆ alkoxy, amino, or nitro,

phenyl which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

R'' may form C₁₋₄ alkylene together with R¹¹ or R¹²,

R³⁴ represents

C₁₋₁₆ alkyl which may be substituted by a halogen atom, carboxyl, phenyl optionally substituted by C₁₋₆ alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C₁₋₆ alkoxy, amino, or nitro,

phenyl which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₆ alkoxy, amino, or nitro,

R¹⁵ and R¹⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be

substituted by amino optionally substituted by C₁₋₆ alkyl
or

R³⁵ and R³⁶ may form a saturated or unsaturated five-
to seven-membered heterocyclic ring together with a
nitrogen atom to which they are attached, and

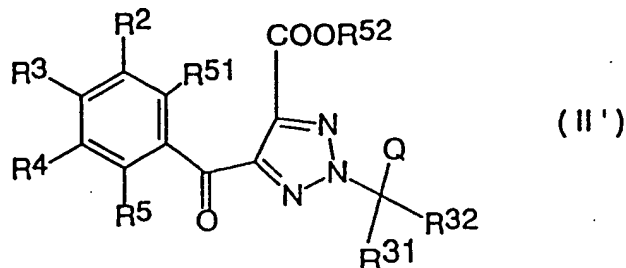
R³⁷ and R³⁸, which may be the same or different,
represent C₁₋₆ alkyl,

R⁵¹ represents nitro or amino, and

R⁵² represents a hydrogen atom or a protective group for carboxyl selected from the group
consisting of methyl, ethyl, tert-butyl, benzyl, 4-methoxybenzyl, diphenylmethyl, 4-nitrobenzyl, tert-
butyldimethylsilyl, triphenylsilyl, 2-phenylsulfonyl, 2-methoxycarbonyl, 2-cyanoethyl, and
2-trimethylsilyl, and

provided that the group -CR³¹R³²Q does not represent C₁₋₆ alkyl substituted by a halogen atom
or C₁₋₆ alkoxy.

32. (Currently amended) A compound represented by formula (II') or a salt or solvate
thereof:



wherein R², R³, R⁴, and R⁵, which may be the same or different, represent any of the following (a) to
(n):

- (a) a hydrogen atom;
- (b) a halogen atom;
- (c) an optionally protected hydroxyl group a hydroxyl group optionally protected by acetyl,
chloroacetyl, dichloroacetyl, trichloroacetyl, benzoyl, 4-nitrobenzoyl, 3-oxobutyryl, benzyl,
diphenylmethyl, triphenylmethyl, 4-methoxybenzyl, 3,4-dimethoxybenzyl, methoxymethyl,
methoxyethoxymethyl, benzyloxymethyl, trimethylsilyl, tert-butyldimethylsilyl, triphenylsilyl, 2-
tetrahydropyranyl, or trimethylsilylethoxymethoxy;
- (d) formyl;
- (e) C₁₋₁₂ alkyl which may be substituted by a halogen atom;

(f) C₁₋₁₂ alkenyl which has one or more carbon-carbon double bonds and may be substituted by

- (1) a halogen atom,
- (2) cyano,
- (3) -COR⁹ wherein R⁹ represents a hydrogen atom or C₁₋₆ alkyl,
- (4) -COOR¹⁰ wherein R¹⁰ represents a hydrogen atom or C₁₋₆ alkyl,
- (5) -CONR¹¹R¹² wherein R¹¹ and R¹², which may be the same or different, represent

(i) a hydrogen atom,

(ii) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl, phenyl optionally substituted by C₁₋₄ alkyl which may be substituted by a saturated five- to seven-membered heterocyclic ring containing one or two nitrogen atoms (the nitrogen atoms may be substituted by C₁₋₄ alkyl), or a saturated or unsaturated five- to seven-membered heterocyclic ring,

(iii) phenyl which may be substituted by carboxyl, or

(iv) a saturated or unsaturated five to seven-membered heterocyclic ring,

(6) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or may form a bicyclic ring fused with another ring;

(g) C₁₋₁₂ alkoxy which may be substituted by

- (1) a halogen atom,
- (2) a hydroxyl group,
- (3) cyano,

- (4) C₁₋₇ cycloalkyl,
- (5) phenyl,
- (6) C₁₋₄ alkoxy,
- (7) phenoxy,
- (8) amino which may be substituted by C₁₋₄ alkyl,
- (9) -COR¹³ wherein R¹³ represents a hydrogen atom, C₁₋₆ alkyl, phenyl optionally substituted by halogen or C₁₋₄ alkoxy, or phenyl C₁₋₄ alkyl,
- (10) -COOR¹⁴ wherein R¹⁴ represents a hydrogen atom or C₁₋₆ alkyl,
- (11) -CONR¹⁵R¹⁶ wherein R¹⁵ and R¹⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or
- (12) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or phenyl C₁₋₄ alkyl;
- (h) -C=N-OR^{16a} wherein R^{16a} represents a hydrogen atom, C₁₋₆ alkyl, phenyl C₁₋₄ alkyl, or phenyl;
- (i) $-(CH_2)_mOR^{17}-(CH_2)_mOR^{17}$ wherein m is an integer of 0 to 4, and R¹⁷ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl C₁₋₄ alkyl of which one or more hydrogen atoms on the benzene ring may be substituted by C₁₋₄ alkyl;
- (j) $-(CH_2)_kCOR^{18}-(CH_2)_kCOR^{18}$ wherein k is an integer of 1 to 4, and R¹⁸ represents a hydrogen atom or C₁₋₄ alkyl;
- (k) $-(CH_2)_jCOOR^{19}-(CH_2)_jCOOR^{19}$ wherein j is an integer of 0 to 4, and R¹⁹ represents a hydrogen atom or C₁₋₆ alkyl;
- (l) $-(CH_2)_pNR^{20}R^{21}-(CH_2)_pNR^{20}R^{21}$ wherein p is an integer of 1 to 4, and R²⁰ and R²¹, which may be the same or different, represent

(1) a hydrogen atom,

(2) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl,

(3) phenyl C₁₋₄ alkyl,

(4) -COR²² wherein R²² represents a hydrogen atom or C₁₋₄ alkyl which may be substituted by carboxyl, or

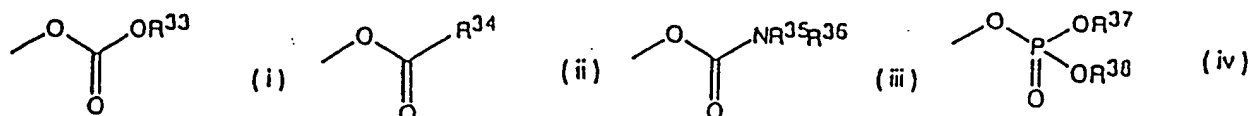
(5) -SO₂R²³ wherein R²³ represents C₁₋₄ alkyl or phenyl which may be substituted by a halogen atom;

(m) $-(CH_2)_q-CONR^{24}R^{25}-(CH_2)_q-CONR^{24}R^{25}$ wherein q is an integer of 0 to 4, and R²⁴ and R²⁵, which may be the same or different, represent a hydrogen atom, a saturated or unsaturated five- to seven-membered heterocyclic ring, or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or alternatively R²⁴ and R²⁵ may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached (the heterocyclic ring may further contain at least one oxygen, nitrogen, or sulfur atom, may form a bicyclic ring fused with another ring, or may be substituted by C₁₋₄ alkyl); and

(n) -NR²⁶R²⁷ wherein R²⁶ and R²⁷, which may be the same or different, represent a hydrogen atom or -COR²⁸ wherein R²⁸ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl which may be substituted by C₁₋₄ alkyl or C₁₋₆ alkoxy optionally substituted by phenyl;

R³¹ and R³², which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a halogen atom; and

Q represents a group selected from the following groups (i) to (iv) or a halogen atom or C₁₋₆ alkoxy:



wherein

R³³ represents

C₁₋₆ alkyl which may be substituted by C₁₋₆ alkoxy optionally substituted by C₁₋₆ alkoxy, phenyl optionally substituted by C₁₋₆ alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C₁₋₆ alkoxy, amino, or nitro,

phenyl which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

R³⁵ may form C₁₋₆ alkylene together with R³⁶ or R³⁷,

R³⁴ represents

C₁₋₆ alkyl which may be substituted by a halogen atom, carboxyl, phenyl optionally substituted by C₁₋₆ alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C₁₋₆ alkoxy, amino, or nitro,

phenyl which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₆ alkoxy, amino, or nitro,

R³⁵ and R³⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be

substituted by amino optionally substituted by C₁₋₄ alkyl
or

R³⁵ and R³⁶ may form a saturated or unsaturated five-
to seven-membered heterocyclic ring together with a
nitrogen atom to which they are attached, and

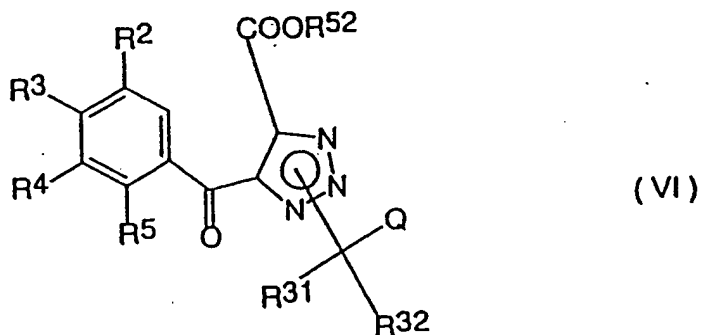
R³⁷ and R³⁸, which may be the same or different,
represent C₁₋₆ alkyl,

R⁵¹ represents nitro or amino, and

R⁵² represents a hydrogen atom or a protective group for carboxyl selected from the group consisting of methyl, ethyl, tert-butyl, benzyl, 4-methoxybenzyl, diphenylmethyl, 4-nitrobenzyl, tert-butyl dimethylsilyl, triphenylsilyl, 2-phenylsulfonyl ethyl, 2-methoxycarbonyl ethyl, 2-cyanoethyl, and 2-trimethylsilyl ethyl,

provided that the group -CR³¹R³²Q does not represent C₁₋₆ alkyl substituted by a halogen atom
or C₁₋₆ alkoxy.

33. (Withdrawn) A compound represented by formula (VI) or a salt or solvate thereof:



wherein R², R³, R⁴, and R⁵, which may be the same or different,
represent any one of the following (a) to (n):

- (a) a hydrogen atom;
- (b) a halogen atom;
- (c) an optionally protected hydroxyl group;
- (d) formyl;
- (e) C₁₋₁₂ alkyl which may be substituted by a halogen
atom;

(f) C₁₋₁₂ alkenyl which has one or more carbon-carbon double bonds and may be substituted by

- (1) a halogen atom,
- (2) cyano,
- (3) -COR⁹ wherein R⁹ represents a hydrogen atom or C₁₋₆ alkyl,
- (4) -COOR¹⁰ wherein R¹⁰ represents a hydrogen atom or C₁₋₆ alkyl,
- (5) -CONR¹¹R¹² wherein R¹¹ and R¹², which may be the same or different, represent

(i) a hydrogen atom,

(ii) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl, phenyl optionally substituted by C₁₋₄ alkyl which may be substituted by a saturated five- to seven-membered heterocyclic ring containing one or two nitrogen atoms (the nitrogen atoms may be substituted by C₁₋₄ alkyl), or a saturated or unsaturated five- to seven-membered heterocyclic ring,

(iii) phenyl which may be substituted by carboxyl, or

(iv) a saturated or unsaturated five to seven-membered heterocyclic ring,

(6) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or may form a bicyclic ring fused with another ring;

(g) C₁₋₁₂ alkoxy which may be substituted by

- (1) a halogen atom,
- (2) a hydroxyl group,
- (3) cyano,

- (4) C₁₋₇, cycloalkyl,
- (5) phenyl,
- (6) C₁₋₄, alkoxy,
- (7) phenoxy,
- (8) amino which may be substituted by C₁₋₄, alkyl,
- (9) -COR¹³ wherein R¹³ represents a hydrogen atom, C₁₋₆, alkyl, phenyl optionally substituted by halogen or C₁₋₄, alkoxy, or phenyl C₁₋₄, alkyl,
- (10) -COOR¹⁴ wherein R¹⁴ represents a hydrogen atom or C₁₋₆, alkyl,
- (11) -CONR¹⁵R¹⁶ wherein R¹⁵ and R¹⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆, alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or
- (12) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄, alkyl or phenyl C₁₋₄, alkyl;
- (h) -C=N-OR^{16a} wherein R^{16a} represents a hydrogen atom, C₁₋₆, alkyl, phenyl C₁₋₄, alkyl, or phenyl;
- (i) -(CH₂)_mOR¹⁷ wherein m is an integer of 0 to 4, and R¹⁷ represents a hydrogen atom, C₁₋₆, alkyl, or phenyl C₁₋₄, alkyl of which one or more hydrogen atoms on the benzene ring may be substituted by C₁₋₄, alkyl;
- (j) -(CH₂)_k-COR¹⁸ wherein k is an integer of 1 to 4, and R¹⁸ represents a hydrogen atom or C₁₋₄, alkyl;
- (k) -(CH₂)_j-COOR¹⁹ wherein j is an integer of 0 to 4, and R¹⁹ represents a hydrogen atom or C₁₋₆, alkyl;
- (l) -(CH₂)_p-NR²⁰R²¹ wherein p is an integer of 1 to 4, and R²⁰ and R²¹, which may be the same or different, represent

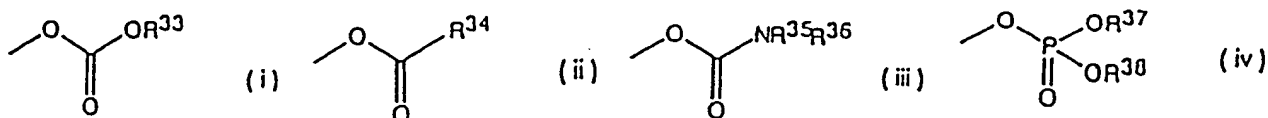
- (1) a hydrogen atom,
- (2) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl,
- (3) phenyl C₁₋₄ alkyl,
- (4) -COR²² wherein R²² represents a hydrogen atom or C₁₋₄ alkyl which may be substituted by carboxyl, or
- (5) -SO₂R²³ wherein R²³ represents C₁₋₄ alkyl or phenyl which may be substituted by a halogen atom;

(m) -(CH₂)_q-CONR²⁴R²⁵ wherein q is an integer of 0 to 4, and R²⁴ and R²⁵, which may be the same or different, represent a hydrogen atom, a saturated or unsaturated five- to seven-membered heterocyclic ring, or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or alternatively R²⁴ and R²⁵ may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached (the heterocyclic ring may further contain at least one oxygen, nitrogen, or sulfur atom, may form a bicyclic ring fused with another ring, or may be substituted by C₁₋₄ alkyl); and

(n) -NR²⁶R²⁷ wherein R²⁶ and R²⁷, which may be the same or different, represent a hydrogen atom or -COR²⁸ wherein R²⁸ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl which may be substituted by C₁₋₄ alkyl or C₁₋₆ alkoxy optionally substituted by phenyl;

R³¹ and R³², which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a halogen atom; and

Q represents a group selected from the following groups (i) to (iv) or a halogen atom or C₁₋₆ alkoxy:



wherein

R³³ represents

C₁₋₆ alkyl which may be substituted by C₁₋₆ alkoxy optionally substituted by C₁₋₆ alkoxy, phenyl optionally substituted by C₁₋₆ alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C₁₋₆ alkoxy, amino, or nitro,

phenyl which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

R³⁵ may form C₁₋₆ alkylene together with R³¹ or R³²,

R³⁴ represents

C₁₋₆ alkyl which may be substituted by a halogen atom, carboxyl, phenyl optionally substituted by C₁₋₆ alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C₁₋₆ alkoxy, amino, or nitro,

phenyl which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₆ alkoxy, amino, or nitro,

R³⁵ and R³⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be

substituted by amino optionally substituted by C₁₋₆ alkyl or

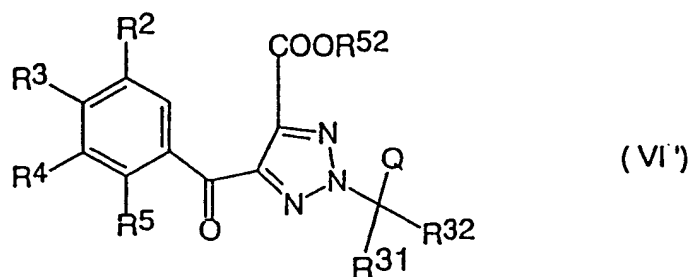
R³⁵ and R³⁶ may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached, and

R³⁷ and R³⁸, which may be the same or different, represent C₁₋₆ alkyl,

R⁵² represents a hydrogen atom or a protective group for carboxyl,

provided that the group -CR³¹R³²Q does not represent C₁₋₆ alkyl substituted by a halogen atom or C₁₋₆ alkoxy.

34. (Withdrawn) A compound represented by formula (VI') or a salt or solvate thereof:



wherein R², R³, R⁴, and R⁵, which may be the same or different, represent any one of the following (a) to (n):

- (a) a hydrogen atom;
- (b) a halogen atom;
- (c) an optionally protected hydroxyl group;
- (d) formyl;
- (e) C₁₋₁₂ alkyl which may be substituted by a halogen atom;

(f) C₁₋₁₂ alkenyl which has one or more carbon-carbon double bonds and may be substituted by

- (1) a halogen atom,
- (2) cyano,
- (3) -COR⁹ wherein R⁹ represents a hydrogen atom or C₁₋₆ alkyl,
- (4) -COOR¹⁰ wherein R¹⁰ represents a hydrogen atom or C₁₋₆ alkyl,
- (5) -CONR¹¹R¹² wherein R¹¹ and R¹², which may be the same or different, represent

(i) a hydrogen atom,

(ii) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl, phenyl optionally substituted by C₁₋₄ alkyl which may be substituted by a saturated five- to seven-membered heterocyclic ring containing one or two nitrogen atoms (the nitrogen atoms may be substituted by C₁₋₄ alkyl), or a saturated or unsaturated five- to seven-membered heterocyclic ring,

(iii) phenyl which may be substituted by carboxyl, or

(iv) a saturated or unsaturated five to seven-membered heterocyclic ring,

(6) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or may form a bicyclic ring fused with another ring;

(g) C₁₋₁₂ alkoxy which may be substituted by

- (1) a halogen atom,
- (2) a hydroxyl group,
- (3) cyano,

- (4) C₁₋₇ cycloalkyl,
- (5) phenyl,
- (6) C₁₋₄ alkoxy,
- (7) phenoxy,
- (8) amino which may be substituted by C₁₋₄ alkyl,
- (9) -COR¹¹ wherein R¹¹ represents a hydrogen atom, C₁₋₆ alkyl, phenyl optionally substituted by halogen or C₁₋₄ alkoxy, or phenyl C₁₋₄ alkyl,
- (10) -COOR¹⁴ wherein R¹⁴ represents a hydrogen atom or C₁₋₆ alkyl,
- (11) -CONR¹⁵R¹⁶ wherein R¹⁵ and R¹⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or
- (12) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or phenyl C₁₋₄ alkyl;
- (h) -C=N-OR^{16a} wherein R^{16a} represents a hydrogen atom, C₁₋₆ alkyl, phenyl C₁₋₄ alkyl, or phenyl;
- (i) -(CH₂)_mMOR¹⁷ wherein m is an integer of 0 to 4, and R¹⁷ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl C₁₋₄ alkyl of which one or more hydrogen atoms on the benzene ring may be substituted by C₁₋₄ alkyl;
- (j) -(CH₂)_k-COR¹⁸ wherein k is an integer of 1 to 4, and R¹⁸ represents a hydrogen atom or C₁₋₄ alkyl;
- (k) -(CH₂)_j-COOR¹⁹ wherein j is an integer of 0 to 4, and R¹⁹ represents a hydrogen atom or C₁₋₆ alkyl;
- (l) -(CH₂)_p-NR²⁰R²¹ wherein p is an integer of 1 to 4, and R²⁰ and R²¹, which may be the same or different, represent

(1) a hydrogen atom,

(2) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl,

(3) phenyl C₁₋₄ alkyl,

(4) -COR²² wherein R²² represents a hydrogen atom or C₁₋₄ alkyl which may be substituted by carboxyl, or

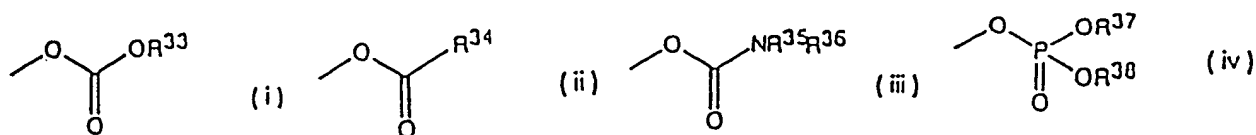
(5) -SO₂R²³ wherein R²³ represents C₁₋₄ alkyl or phenyl which may be substituted by a halogen atom;

(m) -(CH₂)_q-CONR²⁴R²⁵ wherein q is an integer of 0 to 4, and R²⁴ and R²⁵, which may be the same or different, represent a hydrogen atom, a saturated or unsaturated five- to seven-membered heterocyclic ring, or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or alternatively R²⁴ and R²⁵ may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached (the heterocyclic ring may further contain at least one oxygen, nitrogen, or sulfur atom, may form a bicyclic ring fused with another ring, or may be substituted by C₁₋₄ alkyl); and

(n) -NR²⁶R²⁷ wherein R²⁶ and R²⁷, which may be the same or different, represent a hydrogen atom or -COR²⁸ wherein R²⁸ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl which may be substituted by C₁₋₄ alkyl or C₁₋₆ alkoxy optionally substituted by phenyl;

R³¹ and R³², which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a halogen atom; and

Q represents a group selected from the following groups (i) to (iv) or a halogen atom or C₁₋₆ alkoxy:



wherein

R³³ represents

C₁₋₆ alkyl which may be substituted by C₁₋₆ alkoxy optionally substituted by C₁₋₆ alkoxy, phenyl optionally substituted by C₁₋₆ alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C₁₋₆ alkoxy, amino, or nitro,

phenyl which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

R³³ may form C₁₋₆ alkylene together with R³¹ or R³²,

R³⁴ represents

C₁₋₆ alkyl which may be substituted by a halogen atom, carboxyl, phenyl optionally substituted by C₁₋₆ alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C₁₋₆ alkoxy, amino, or nitro,

phenyl which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₆ alkoxy, amino, or nitro,

R³⁵ and R³⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be

substituted by amino optionally substituted by C₁₋₄ alkyl or

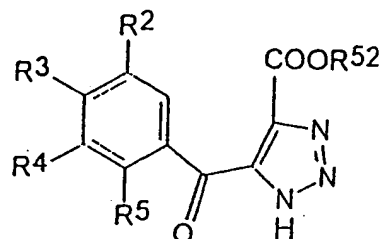
R³⁵ and R³⁶ may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached, and

R³⁷ and R³⁸, which may be the same or different, represent C₁₋₆ alkyl,

R⁵² represents a hydrogen atom or a protective group for carboxyl,

provided that the group -CR³¹R³²Q does not represent C₁₋₆ alkyl substituted by a halogen atom or C₁₋₆ alkoxy.

35. (Withdrawn) A compound represented by formula (VII) or a salt or solvate thereof:



(VII)

wherein R², R³, R⁴, and R⁵, which may be the same or different, represent any one of the following (a) to (n):

- (a) a hydrogen atom;
- (b) a halogen atom;
- (c) an optionally protected hydroxyl group;
- (d) formyl;
- (e) C₁₋₁₂ alkyl which may be substituted by a halogen atom;
- (f) C₂₋₁₂ alkenyl which has one or more carbon-carbon double bonds and may be substituted by
 - (1) a halogen atom,

- (2) cyano,
- (3) $-\text{COR}^9$ wherein R^9 represents a hydrogen atom or C_{1-6} alkyl,
- (4) $-\text{COOR}^{10}$ wherein R^{10} represents a hydrogen atom or C_{1-6} alkyl,
- (5) $-\text{CONR}^{11}\text{R}^{12}$ wherein R^{11} and R^{12} , which may be the same or different, represent

- (i) a hydrogen atom,

- (ii) C_{1-6} alkyl which may be substituted by amino optionally substituted by C_{1-4} alkyl, phenyl optionally substituted by C_{1-4} alkyl which may be substituted by a saturated five- to seven-membered heterocyclic ring containing one or two nitrogen atoms (the nitrogen atoms may be substituted by C_{1-4} alkyl), or a saturated or unsaturated five- to seven-membered heterocyclic ring,

- (iii) phenyl which may be substituted by carboxyl, or

- (iv) a saturated or unsaturated five to seven-membered heterocyclic ring,

- (6) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C_{1-4} alkyl or may form a bicyclic ring fused with another ring;

- (g) C_{1-12} alkoxy which may be substituted by

- (1) a halogen atom,

- (2) a hydroxyl group,

- (3) cyano,

- (4) C_{1-7} cycloalkyl,

- (5) phenyl,

- (6) C₁₋₄ alkoxy,
- (7) phenoxy,
- (8) amino which may be substituted by C₁₋₄ alkyl,
- (9) -COR¹³ wherein R¹³ represents a hydrogen atom, C₁₋₆ alkyl, phenyl optionally substituted by halogen or C₁₋₄ alkoxy, or phenyl C₁₋₄ alkyl,
- (10) -COOR¹⁴ wherein R¹⁴ represents a hydrogen atom or C₁₋₆ alkyl,
- (11) -CONR¹⁵R¹⁶ wherein R¹⁵ and R¹⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or
- (12) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or phenyl C₁₋₄ alkyl;
- (h) -C=N-OR^{16a} wherein R^{16a} represents a hydrogen atom, C₁₋₆ alkyl, phenyl C₁₋₄ alkyl, or phenyl;
- (i) -(CH₂)_mOR¹⁷ wherein m is an integer of 0 to 4, and R¹⁷ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl C₁₋₄ alkyl of which one or more hydrogen atoms on the benzene ring may be substituted by C₁₋₄ alkyl;
- (j) -(CH₂)_k-COR¹⁸ wherein k is an integer of 1 to 4, and R¹⁸ represents a hydrogen atom or C₁₋₄ alkyl;
- (k) -(CH₂)_j-COOR¹⁹ wherein j is an integer of 0 to 4, and R¹⁹ represents a hydrogen atom or C₁₋₆ alkyl;
- (l) -(CH₂)_p-NR²⁰R²¹ wherein p is an integer of 1 to 4, and R²⁰ and R²¹, which may be the same or different, represent
- (1) a hydrogen atom,

(2) C_{1-6} alkyl which may be substituted by amino optionally substituted by C_{1-4} alkyl,

(3) phenyl C_{1-4} alkyl,

(4) $-COR^{22}$ wherein R^{22} represents a hydrogen atom or C_{1-4} alkyl which may be substituted by carboxyl, or

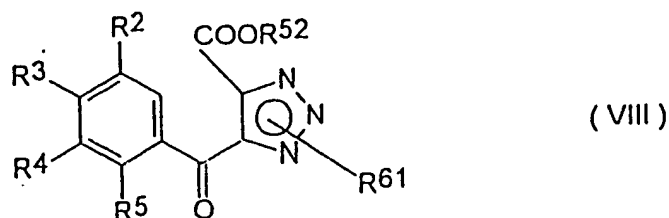
(5) $-SO_2R^{23}$ wherein R^{23} represents C_{1-4} alkyl or phenyl which may be substituted by a halogen atom;

(m) $-(CH_2)_q-CONR^{24}R^{25}$ wherein q is an integer of 0 to 4, and R^{24} and R^{25} , which may be the same or different, represent a hydrogen atom, a saturated or unsaturated five- to seven-membered heterocyclic ring, or C_{1-6} alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or alternatively R^{24} and R^{25} may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached (the heterocyclic ring may further contain at least one oxygen, nitrogen, or sulfur atom, may form a bicyclic ring fused with another ring, or may be substituted by C_{1-4} alkyl); and

(n) $-NR^{26}R^{27}$ wherein R^{26} and R^{27} , which may be the same or different, represent a hydrogen atom or $-COR^{28}$ wherein R^{28} represents a hydrogen atom, C_{1-6} alkyl, or phenyl which may be substituted by C_{1-4} alkyl or C_{1-6} alkoxy optionally substituted by phenyl; and

R^{32} represents a hydrogen atom or a protective group for carboxyl.

36. (Withdrawn) A compound represented by formula (VIII) or a salt or solvate thereof:



wherein R^2 , R^3 , R^4 , and R^5 , which may be the same or different, represent any one of the following (a) to (n):

- (a) a hydrogen atom;
- (b) a halogen atom;
- (c) an optionally protected hydroxyl group;
- (d) formyl;
- (e) C_{1-12} alkyl which may be substituted by a halogen atom;
- (f) C_{2-12} alkenyl which has one or more carbon-carbon double bonds and may be substituted by
 - (1) a halogen atom,
 - (2) cyano,
 - (3) $-COR^9$ wherein R^9 represents a hydrogen atom or C_{1-6} alkyl,
 - (4) $-COOR^{10}$ wherein R^{10} represents a hydrogen atom or C_{1-6} alkyl,
 - (5) $-CONR^{11}R^{12}$ wherein R^{11} and R^{12} , which may be the same or different, represent
 - (i) a hydrogen atom,
 - (ii) C_{1-6} alkyl which may be substituted by amino optionally substituted by C_{1-4} alkyl, phenyl optionally substituted by C_{1-4} alkyl which may be substituted by a saturated five- to seven-membered heterocyclic ring containing one or two nitrogen atoms (the

nitrogen atoms may be substituted by C₁₋₄ alkyl), or a saturated or unsaturated five- to seven-membered heterocyclic ring,

(iii) phenyl which may be substituted by carboxyl, or

(iv) a saturated or unsaturated five to seven-membered heterocyclic ring,

(6) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or may form a bicyclic ring fused with another ring;

(g) C₁₋₁₂ alkoxy which may be substituted by

(1) a halogen atom,

(2) a hydroxyl group,

(3) cyano,

(4) C₁₋₇ cycloalkyl,

(5) phenyl,

(6) C₁₋₄ alkoxy,

(7) phenoxy,

(8) amino which may be substituted by C₁₋₄ alkyl,

(9) -COR¹³ wherein R¹³ represents a hydrogen atom, C₁₋₆ alkyl, phenyl optionally substituted by halogen or C₁₋₄ alkoxy, or phenyl C₁₋₄ alkyl,

(10) -COOR¹⁴ wherein R¹⁴ represents a hydrogen atom or C₁₋₆ alkyl,

(11) -CONR¹⁵R¹⁶ wherein R¹⁵ and R¹⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or

(12) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or phenyl C₁₋₄ alkyl;

(h) $-C=N-OR^{16a}$ wherein R^{16a} represents a hydrogen atom, C₁₋₆ alkyl, phenyl C₁₋₄ alkyl, or phenyl;

(i) $-(CH_2)_mOR^{17}$ wherein m is an integer of 0 to 4, and R¹⁷ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl C₁₋₄ alkyl of which one or more hydrogen atoms on the benzene ring may be substituted by C₁₋₄ alkyl;

(j) $-(CH_2)_k-COR^{18}$ wherein k is an integer of 1 to 4, and R¹⁸ represents a hydrogen atom or C₁₋₄ alkyl;

(k) $-(CH_2)_j-COOR^{19}$ wherein j is an integer of 0 to 4, and R¹⁹ represents a hydrogen atom or C₁₋₆ alkyl;

(l) $-(CH_2)_p-NR^{20}R^{21}$ wherein p is an integer of 1 to 4, and R²⁰ and R²¹, which may be the same or different, represent

(1) a hydrogen atom,

(2) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl,

(3) phenyl C₁₋₄ alkyl,

(4) $-COR^{22}$ wherein R²² represents a hydrogen atom or C₁₋₄ alkyl which may be substituted by carboxyl, or

(5) $-SO_2R^{23}$ wherein R²³ represents C₁₋₄ alkyl or phenyl which may be substituted by a halogen atom;

(m) $-(CH_2)_q-CONR^{24}R^{25}$ wherein q is an integer of 0 to 4, and R²⁴ and R²⁵, which may be the same or different, represent a hydrogen atom, a saturated or unsaturated

five- to seven-membered heterocyclic ring, or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or alternatively R²⁴ and R²⁵ may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached (the heterocyclic ring may further contain at least one oxygen, nitrogen, or sulfur atom, may form a bicyclic ring fused with another ring, or may be substituted by C₁₋₄ alkyl); and

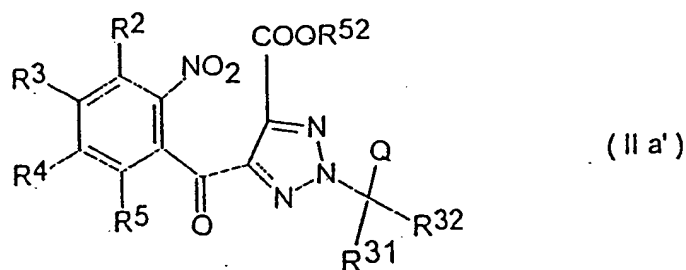
(n) -NR²⁶R²⁷ wherein R²⁶ and R²⁷, which may be the same or different, represent a hydrogen atom or -COR²⁸ wherein R²⁸ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl which may be substituted by C₁₋₄ alkyl or C₁₋₆ alkoxy optionally substituted by phenyl;

R⁵² represents a hydrogen atom or a protective group for carboxyl; and

R⁶¹ represents a protective group for triazole.

Claim 37 (New)

A process for preparing a compound represented by formula (IIa')



wherein

R^2 , R^3 , R^4 , and R^5 , which may be the same or different, represent any one of the following (a) to (n):

- (a) hydrogen atom;
- (b) halogen atom;
- (c) a hydroxyl group optionally protected by acetyl, chloroacetyl, dichloroacetyl, trichloroacetyl, benzoyl, 4-nitrobenzoyl, 3-oxobutyryl, benzyl, diphenylmethyl, triphenylmethyl, 4-methoxybenzyl, 3,4-dimethoxybenzyl, methoxymethyl, methoxyethoxymethyl, benzyloxymethyl, trimethylsilyl, tert-butyltrimethylsilyl, triphenylsilyl, 2-tetrahydropyranyl, or trimethylsilylethoxymethoxy;
- (d) formyl;
- (e) C_{1-12} alkyl which may be substituted by a halogen atom;
- (f) C_{2-12} alkenyl which has one or more carbon-carbon double bonds and may be substituted by

- (1) a halogen atom,
- (2) cyano,
- (3) $-COR^9$ wherein R^9 represents a hydrogen atom or C_{1-6} alkyl,
- (4) $-COOR^{10}$ wherein R^{10} represents a hydrogen atom or C_{1-6} alkyl,
- (5) $-CONR^{11}R^{12}$ wherein R^{11} and R^{12} , which may be the same or different, represent

- (i) a hydrogen atom,

- (ii) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl, phenyl optionally substituted by C₁₋₄ alkyl which may be substituted by a saturated five- to seven-membered heterocyclic ring containing one or two nitrogen atoms (the nitrogen atoms may be substituted by C₁₋₄ alkyl), or a saturated or unsaturated five- to seven-membered heterocyclic ring,
- (iii) phenyl which may be substituted by carboxyl, or
- (iv) a saturated or unsaturated five to seven-membered heterocyclic ring,
- (6) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or may form a bicyclic ring fused with another ring;
- (g) C₁₋₁₂ alkoxy which may be substituted by
 - (1) a halogen atom,
 - (2) a hydroxyl group,
 - (3) cyano,
 - (4) C₃₋₇ cycloalkyl,
 - (5) phenyl,
 - (6) C₁₋₄ alkoxy,
 - (7) phenoxy,
 - (8) amino which may be substituted by C₁₋₄ alkyl,
 - (9) -COR¹³ wherein R¹³ represents a hydrogen atom, C₁₋₆ alkyl, phenyl optionally substituted by halogen or C₁₋₄ alkoxy, or phenyl C₁₋₄ alkyl,
 - (10) -COOR¹⁴ wherein R¹⁴ represents a hydrogen atom or C₁₋₆ alkyl,
 - (11) -CONR¹⁵R¹⁶ wherein R¹⁵ and R¹⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or

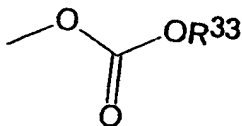
- (12) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or phenyl C₁₋₄ alkyl;
- (h) -C=N-OR¹⁶ wherein R¹⁶ represents a hydrogen atom, C₁₋₆ alkyl, phenyl C₁₋₄ alkyl, or phenyl;
- (i) -(CH₂)_mOR¹⁷ wherein m is an integer of 0 to 4, and R¹⁷ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl C₁₋₄ alkyl of which one or more hydrogen atoms on the benzene ring may be substituted by C₁₋₄ alkyl;
- (j) -(CH₂)_k-COR¹⁸ wherein k is an integer of 1 to 4, and R¹⁸ represents a hydrogen atom or C₁₋₄ alkyl;
- (k) -(CH₂)_j-COOR¹⁹ wherein j is an integer of 0 to 4, and R¹⁹ represents a hydrogen atom or C₁₋₆ alkyl;
- (l) -(CH₂)_p-NR²⁰R²¹ wherein p is an integer of 1 to 4, and R²⁰ and R²¹, which may be the same or different, represent
- (1) a hydrogen atom,
 - (2) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl,
 - (3) phenyl C₁₋₄ alkyl,
 - (4) -COR²² wherein R²² represents a hydrogen atom or C₁₋₄ alkyl which may be substituted by carboxyl, or
 - (5) -SO₂R²³ wherein R²³ represents C₁₋₄ alkyl or phenyl which may be substituted by a halogen atom;
- (m) -(CH₂)_q-CONR²⁴R²⁵ wherein q is an integer of 0 to 4, and R²⁴ and R²⁵, which may be the same or different, represent a hydrogen atom, a saturated or unsaturated five- to seven-membered heterocyclic ring, or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or alternatively R²⁴ and R²⁵ may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached (the heterocyclic ring may further contain at least one oxygen, nitrogen, or sulfur atom, may form a bicyclic ring fused with another ring, or may be substituted by C₁₋₄ alkyl); and

(n) $-NR^{26}R^{27}$ wherein R^{26} and R^{27} , which may be the same or different, represent a hydrogen atom or $-COR^{28}$ wherein R^{28} represents a hydrogen atom, C_{1-6} alkyl, or phenyl which may be substituted by C_{1-4} alkyl or C_{1-6} alkoxy optionally substituted by phenyl;

R^{31} and R^{32} , which may be the same or different, represent a hydrogen atom or C_{1-6} alkyl which may be substituted by a halogen atom;

R^{52} represents a hydrogen atom or a protective group for carboxyl selected from the group consisting of methyl, ethyl, tert-butyl, benzyl, 4-methoxybenzyl, diphenylmethyl, 4-nitrobenzyl, tert-butyldimethylsilyl, triphenylsilyl, 2-phenylsulfonyl, 2-methoxycarbonyl, 2-cyanoethyl, and 2-trimethylsilyl, and

Q represents



wherein

R^{33} represents

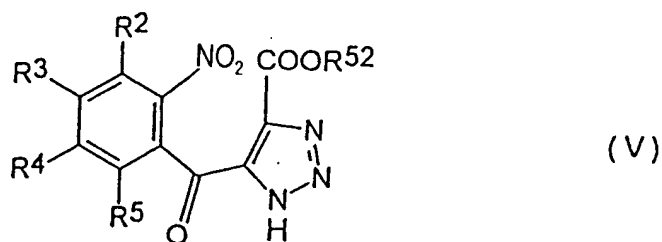
C_{1-6} alkyl which may be substituted by C_{1-6} alkoxy optionally substituted by C_{1-6} alkoxy, phenyl optionally substituted by C_{1-6} alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C_{1-6} alkoxy, amino, or nitro,

phenyl which may be substituted by C_{1-6} alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C_{1-6} alkoxy, amino, or nitro, or

R^{33} may form C_{1-4} alkylene together with R^{31} or R^{32} ,

which comprises:

(1) reacting a compound represented by formula (V)



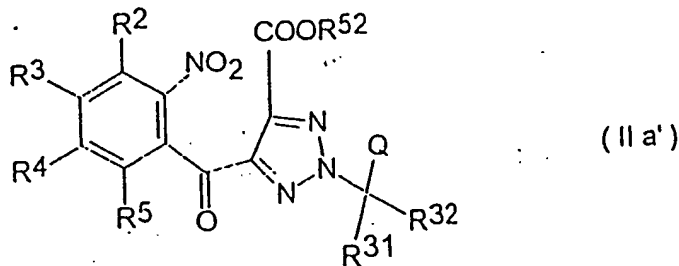
wherein R^2 to R^5 and R^{52} are as defined above,

with a compound represented by $R^{31}R^{32}C=O$ wherein R^{31} and R^{32} are as defined above;

(2) reacting the compound prepared in (1) with a compound represented by $R^{71}-C(=O)-R^{72}$ wherein R^{71} and R^{72} each independently represent a chlorine atom, 4-nitrophenyl, or 1-imidazolyl; and

(3) reacting the compound prepared in (2) with a compound represented by $R^{33}OH$ wherein R^{33} is as defined above.

Claim 38 (New) A process for preparing a compound represented by formula (IIa')



wherein

R^2 , R^3 , R^4 , and R^5 , which may be the same or different, represent any one of the following (a) to (n):

- (a) hydrogen atom;
- (b) halogen atom;
- (c) a hydroxyl group optionally protected by acetyl, chloroacetyl, dichloroacetyl, trichloroacetyl, benzoyl, 4-nitrobenzoyl, 3-oxobutyryl, benzyl, diphenylmethyl, triphenylmethyl, 4-methoxybenzyl, 3,4-dimethoxybenzyl,

methoxymethyl, methoxyethoxymethyl, benzyloxymethyl, trimethylsilyl, tert-butyltrimethylsilyl, triphenylsilyl, 2-tetrahydropyranyl, or trimethylsilylethoxymethoxy;

(d) formyl;

(e) C₁₋₁₂ alkyl which may be substituted by a halogen atom;

(f) C₂₋₁₂ alkenyl which has one or more carbon-carbon double bonds and may be substituted by

(1) a halogen atom,

(2) cyano,

(3) -COR⁹ wherein R⁹ represents a hydrogen atom or C₁₋₆ alkyl,

(4) -COOR¹⁰ wherein R¹⁰ represents a hydrogen atom or C₁₋₆ alkyl,

(5) -CONR¹¹R¹² wherein R¹¹ and R¹², which may be the same or different, represent

(i) a hydrogen atom,

(ii) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl, phenyl optionally substituted by C₁₋₄ alkyl which may be substituted by a saturated five- to seven-membered heterocyclic ring containing one or two nitrogen atoms (the nitrogen atoms may be substituted by C₁₋₄ alkyl), or a saturated or unsaturated five- to seven-membered heterocyclic ring,

(iii) phenyl which may be substituted by carboxyl, or

(iv) a saturated or unsaturated five to seven-membered heterocyclic ring,

(6) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or may form a bicyclic ring fused with another ring;

(g) C₁₋₁₂ alkoxy which may be substituted by

(1) a halogen atom,

(2) a hydroxyl group,

- (3) cyano,
- (4) C₃₋₇ cycloalkyl,
- (5) phenyl,
- (6) C₁₋₄ alkoxy,
- (7) phenoxy,
- (8) amino which may be substituted by C₁₋₄ alkyl,
- (9) -COR¹³ wherein R¹³ represents a hydrogen atom, C₁₋₆ alkyl, phenyl optionally substituted by halogen or C₁₋₄ alkoxy, or phenyl C₁₋₄ alkyl,
- (10) -COOR¹⁴ wherein R¹⁴ represents a hydrogen atom or C₁₋₆ alkyl,
- (11) -CONR¹⁵R¹⁶ wherein R¹⁵ and R¹⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or
- (12) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or phenyl C₁₋₄ alkyl;
- (h) -C=N-OR¹⁶ wherein R¹⁶ represents a hydrogen atom, C₁₋₆ alkyl, phenyl C₁₋₄ alkyl, or phenyl;
- (i) -(CH₂)_mOR¹⁷ wherein m is an integer of 0 to 4, and R¹⁷ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl C₁₋₄ alkyl of which one or more hydrogen atoms on the benzene ring may be substituted by C₁₋₄ alkyl;
- (j) -(CH₂)_k-COR¹⁸ wherein k is an integer of 1 to 4, and R¹⁸ represents a hydrogen atom or C₁₋₄ alkyl;
- (k) -(CH₂)_j-COOR¹⁹ wherein j is an integer of 0 to 4, and R¹⁹ represents a hydrogen atom or C₁₋₆ alkyl;
- (l) -(CH₂)_p-NR²⁰R²¹ wherein p is an integer of 1 to 4, and R²⁰ and R²¹, which may be the same or different, represent
 - (1) a hydrogen atom,
 - (2) C₁₋₆ alkyl which may be substituted by amino optionally

substituted by C₁₋₄ alkyl,

(3) phenyl C₁₋₄ alkyl,

(4) -COR²² wherein R²² represents a hydrogen atom or C₁₋₄ alkyl which may be substituted by carboxyl, or

(5) -SO₂R²³ wherein R²³ represents C₁₋₄ alkyl or phenyl which may be substituted by a halogen atom;

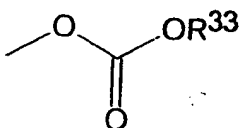
(m) -(CH₂)_q-CONR²⁴R²⁵ wherein q is an integer of 0 to 4, and R²⁴ and R²⁵, which may be the same or different, represent a hydrogen atom, a saturated or unsaturated five- to seven-membered heterocyclic ring, or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or alternatively R²⁴ and R²⁵ may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached (the heterocyclic ring may further contain at least one oxygen, nitrogen, or sulfur atom, may form a bicyclic ring fused with another ring, or may be substituted by C₁₋₄ alkyl); and

(n) -NR²⁶R²⁷ wherein R²⁶ and R²⁷, which may be the same or different, represent a hydrogen atom or -COR²⁸ wherein R²⁸ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl which may be substituted by C₁₋₄ alkyl or C₁₋₆ alkoxy optionally substituted by phenyl;

R³¹ and R³², which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a halogen atom;

R⁵² represents a hydrogen atom or a protective group for carboxyl selected from the group consisting of methyl, ethyl, tert-butyl, benzyl, 4-methoxybenzyl, diphenylmethyl, 4-nitrobenzyl, tert-butyldimethylsilyl, triphenylsilyl, 2-phenylsulfonylethyl, 2-methoxycarbonylethyl, 2-cyanoethyl, and 2-trimethylsilylethyl, and

Q represents



wherein

R^{33} represents

C_{1-6} alkyl which may be substituted by C_{1-6} alkoxy optionally substituted by C_{1-6} alkoxy, phenyl optionally substituted by C_{1-6} alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C_{1-6} alkoxy, amino, or nitro,

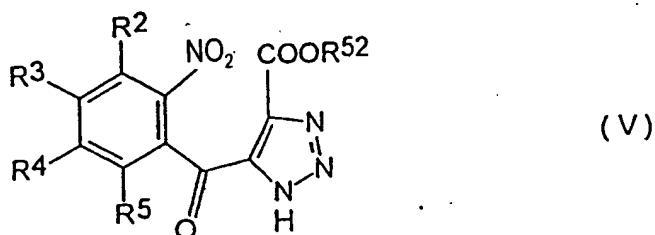
phenyl which may be substituted by C_{1-6} alkoxy, amino, or nitro, or

a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C_{1-6} alkoxy, amino, or nitro, or

R^{33} may form C_{1-4} alkylene together with R^{31} or R^{32} ,

which comprises:

(1) reacting a compound represented by formula (V)

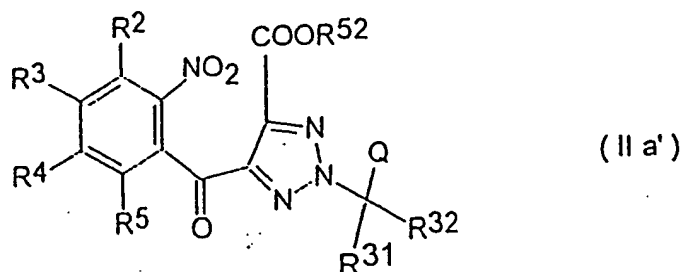


wherein R^2 to R^5 and R^{52} are as defined above,

with a compound represented by $R^{31}R^{32}C=O$ wherein R^{31} and R^{32} are as defined above;
and

(2) reacting the compound prepared in (1) with a compound represented by $HalCOOR^{33}$ wherein Hal represents a halogen atom and R^{33} is as defined above, in the presence of an alkali metal carbonate and an alkali metal iodide.

Claim 39 (New) A process for preparing a compound represented by formula (IIa')



wherein

R^2 , R^3 , R^4 , and R^5 , which may be the same or different, represent any one of the following (a) to (n):

- (a) hydrogen atom;
- (b) halogen atom;
- (c) a hydroxyl group optionally protected by acetyl, chloroacetyl, dichloroacetyl, trichloroacetyl, benzoyl, 4-nitrobenzoyl, 3-oxobutyryl, benzyl, diphenylmethyl, triphenylmethyl, 4-methoxybenzyl, 3,4-dimethoxybenzyl, methoxymethyl, methoxyethoxymethyl, benzyloxymethyl, trimethylsilyl, tert-butyltrimethylsilyl, triphenylsilyl, 2-tetrahydropyranyl, or trimethylsilylethoxymethoxy;

(d) formyl;

(e) C_{1-12} alkyl which may be substituted by a halogen atom;

(f) C_{2-12} alkenyl which has one or more carbon-carbon double bonds and may be substituted by

- (1) a halogen atom,
- (2) cyano,
- (3) $-COR^9$ wherein R^9 represents a hydrogen atom or C_{1-6} alkyl,
- (4) $-COOR^{10}$ wherein R^{10} represents a hydrogen atom or C_{1-6} alkyl,
- (5) $-CONR^{11}R^{12}$ wherein R^{11} and R^{12} , which may be the same or different, represent

- (i) a hydrogen atom,
- (ii) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl, phenyl optionally substituted by C₁₋₄ alkyl which may be substituted by a saturated five- to seven-membered heterocyclic ring containing one or two nitrogen atoms (the nitrogen atoms may be substituted by C₁₋₄ alkyl), or a saturated or unsaturated five- to seven-membered heterocyclic ring,
- (iii) phenyl which may be substituted by carboxyl, or
- (iv) a saturated or unsaturated five to seven-membered heterocyclic ring,
- (6) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or may form a bicyclic ring fused with another ring;
- (g) C₁₋₁₂ alkoxy which may be substituted by
 - (1) a halogen atom,
 - (2) a hydroxyl group,
 - (3) cyano,
 - (4) C₃₋₇ cycloalkyl,
 - (5) phenyl,
 - (6) C₁₋₄ alkoxy,
 - (7) phenoxy,
 - (8) amino which may be substituted by C₁₋₄ alkyl,
 - (9) -COR¹³ wherein R¹³ represents a hydrogen atom, C₁₋₆ alkyl, phenyl optionally substituted by halogen or C₁₋₄ alkoxy, or phenyl C₁₋₄ alkyl,
 - (10) -COOR¹⁴ wherein R¹⁴ represents a hydrogen atom or C₁₋₆ alkyl,
 - (11) -CONR¹⁵R¹⁶ wherein R¹⁵ and R¹⁶, which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered

heterocyclic ring, or

(12) a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₄ alkyl or phenyl C₁₋₄ alkyl;

(h) -C=N-OR¹⁶ wherein R¹⁶ represents a hydrogen atom, C₁₋₆ alkyl, phenyl C₁₋₄ alkyl, or phenyl;

(i) -(CH₂)_mOR¹⁷ wherein m is an integer of 0 to 4, and R¹⁷ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl C₁₋₄ alkyl of which one or more hydrogen atoms on the benzene ring may be substituted by C₁₋₄ alkyl;

(j) -(CH₂)_k-COR¹⁸ wherein k is an integer of 1 to 4, and R¹⁸ represents a hydrogen atom or C₁₋₄ alkyl;

(k) -(CH₂)_j-COOR¹⁹ wherein j is an integer of 0 to 4, and R¹⁹ represents a hydrogen atom or C₁₋₆ alkyl;

(l) -(CH₂)_p-NR²⁰R²¹ wherein p is an integer of 1 to 4, and R²⁰ and R²¹, which may be the same or different, represent

(1) a hydrogen atom,

(2) C₁₋₆ alkyl which may be substituted by amino optionally substituted by C₁₋₄ alkyl,

(3) phenyl C₁₋₄ alkyl,

(4) -COR²² wherein R²² represents a hydrogen atom or C₁₋₄ alkyl which may be substituted by carboxyl, or

(5) -SO₂R²³ wherein R²³ represents C₁₋₄ alkyl or phenyl which may be substituted by a halogen atom;

(m) -(CH₂)_q-CONR²⁴R²⁵ wherein q is an integer of 0 to 4, and R²⁴ and R²⁵, which may be the same or different, represent a hydrogen atom, a saturated or unsaturated five- to seven-membered heterocyclic ring, or C₁₋₆ alkyl which may be substituted by a saturated or unsaturated five- to seven-membered heterocyclic ring, or alternatively R²⁴ and R²⁵ may form a saturated or unsaturated five- to seven-membered heterocyclic ring together with a nitrogen atom to which they are attached (the heterocyclic ring may further contain at least one oxygen, nitrogen, or sulfur atom, may form a bicyclic ring fused with another ring, or may

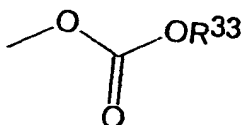
be substituted by C₁₋₄ alkyl); and

(n) -NR²⁶R²⁷ wherein R²⁶ and R²⁷, which may be the same or different, represent a hydrogen atom or -COR²⁸ wherein R²⁸ represents a hydrogen atom, C₁₋₆ alkyl, or phenyl which may be substituted by C₁₋₄ alkyl or C₁₋₆ alkoxy optionally substituted by phenyl;

R³¹ and R³², which may be the same or different, represent a hydrogen atom or C₁₋₆ alkyl which may be substituted by a halogen atom;

R⁵² represents a hydrogen atom or a protective group for carboxyl selected from the group consisting of methyl, ethyl, tert-butyl, benzyl, 4-methoxybenzyl, diphenylmethyl, 4-nitrobenzyl, tert-butyldimethylsilyl, triphenylsilyl, 2-phenylsulfonyl ethyl, 2-methoxycarbonyl ethyl, 2-cyanoethyl, and 2-trimethylsilyl ethyl, and

Q represents



wherein

R³³ represents

C₁₋₆ alkyl which may be substituted by C₁₋₆ alkoxy optionally substituted by C₁₋₆ alkoxy, phenyl optionally substituted by C₁₋₆ alkoxy, amino, or nitro, or a saturated or unsaturated five- to seven-membered heterocyclic ring optionally substituted by C₁₋₆ alkoxy, amino, or nitro,

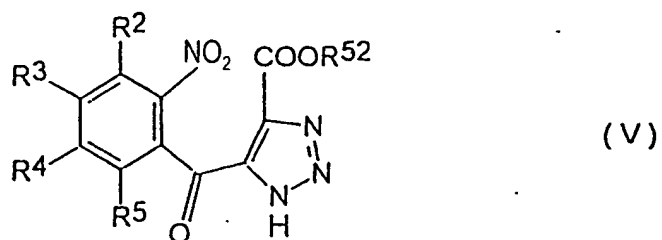
phenyl which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

a saturated or unsaturated five- to seven-membered heterocyclic ring which may be substituted by C₁₋₆ alkoxy, amino, or nitro, or

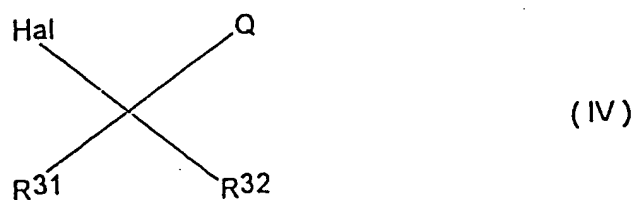
R³³ may form C₁₋₄ alkylene together with R³¹ or R³²,

which comprises:

reacting a compound represented by formula (V)



wherein R^2 to R^5 and R^{52} are as defined above,
with a compound represented by formula (IV)



wherein Hal represents a halogen atom, and Q, R^{31} and R^{32} are as defined above, in the presence of an inorganic base and an alkali metal iodide.